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A UV flame sensor is formed on a multilayer printed circuit board. The circuitry of the sensor includes a photodiode for detecting an input signal, an amplifier for amplifying the input signal, a FET for providing automatic gain control, and at least one capacitor for providing stability to the output signal of the amplifier. The capacitor is formed from a capacitance laminate buried in the PCB. Furthermore, the PCB is designed so that there are guard bands disposed on each layer of the PCB at identical positions, and tracks of equal potential disposed in identical locations on the interior layers of the PCB. These guard bands and tracks are identically shaped. A method of producing the flame sensor is also described.